UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN STREET
CHICAGO, IL 60604

142886

REPLY TO THE ATTENTION OF:
5SMQA

MEMORANDUM

DATE: NOV 21 1991

SUBJECT: Approval of the First Revision, Quality Assurance Project Plan (QAPjP) for Oversight Activities at Waukegan Manufactured Gas and Coke Plant Site, Waukegan, Illinois

FROM: Valerie J. Jones
Regional Quality Assurance Manager

TO: Jonas Dikinis, Chief
Illinois/Indiana Remedial Response Branch

ATTENTION: Cindy Nolan, Remedial Project Manager

I am providing approval of the subject QAPjP. The Quality Assurance Section (QAS) received the subject QAPjP on November 6, 1991, (QAS Log-in No. 1642).

Please note, to facilitate this approval, the following corrections have been made to the QAPjP:

A. In Section 1.3, page 4 of 6, paragraph three, corrected the following statement pertaining to the Data Quality Objective (DQO) level for dibenzofurans and dioxins analysis:

The Data Quality Objectives (DQOs) of Level of 4 for all TAL and TCL analyses and DQO Level 5 for dibenzofurans and dibenzodioxins are appropriate.

B. In Section 3.0, page 2 of 2, first paragraph, added the following sentence to the end of the paragraph:

Double the normal volume (2 x 1,000 milliliter bottles) will be collected for inorganics.

C. In Table 4.1, corrected the following:

Note #1 Two trench and two surface soil samples will be analyzed for dibenzofurans and dibenzodioxins using the SAS.

Note #2 **Three times the normal sample volume for VOC analysis, double the normal sample volume for SVOCs and pesticides/PCBs analysis, and double the normal sample volume for inorganic analysis will be collected for one of the investigative samples. The additional sample will be used by the laboratory for matrix spike/matrix spike duplicate analysis.**

D. In Table 4-2, correct the following:

1. Changed the heading "Holding Time" to **"Contractual Holding Time".**

2. Combined **dibenzofurans and dibenzodioxins.**

E. In Section 4.1, page 4 of 6, second paragraph, corrected the statement pertaining to matrix spike/matrix spike duplicate samples:

For one investigative oversight sample, three times the normal sample volume for VOC analysis, double the normal sample volume for SVOCs and pesticides/PCBs analysis, and double the normal sample volume for inorganic analysis will be collected. The extra volumes will be used by the laboratory for MS/MSD analysis.

F. In Section 4.2.4, the following has been revised:

1. Sample packaging and shipment will be performed according to the EPA requirements as described in Appendix D of the **U.S. EPA Region V Central Regional Laboratory SARA/Superfund Sample Handling Manual, March 1989.**

2. All low level samples container will be enclosed in a clear plastic bag and placed in a cooler packed with noncombustible, absorbent packing material.

3. All medium level and dioxin samples must be sealed in metal paint cans for shipment.

G. Appendix A - Target Compound List and Inorganic Target Analyte List

The TCL and TAL lists were not provided, therefore, we have inserted the most current list in the appendix.

A copy of the corrected pages is attached for your use. The corrected pages shall be incorporated into the QAPjP.

The original signature page is included. Please have the remedial project manager provide final sign-off. We would like to receive a copy of the completed signature page within the next two weeks.

Attachments

cc: Kaushal Khanna, TSU
Charles Elly, CRL

REVISION 1

Final
Quality Assurance Project Plan
for Oversight Sampling Program
Waukegan Manufactured Gas and Coke Plant Site
Waukegan, Illinois

U.S. EPA - Remedial and Enforcement Response Branch
230 S. Dearborn Street, Chicago, IL 60604

Prepared By: **PRC Environmental Management, Inc. (PRC)**
233 N. Michigan Avenue Suite 1621
Chicago, Illinois 60601

Date: November 4, 1991

Approvals: Ray Martin for ________ **Date** 11·5·91
Rick Hersemann
Project Manager, PRC

David C. Liu ________ **Date** 11-5-91
David Liu
QA Officer, PRC

________ **Date** ________
Cindy J. Nolan
RPM, Region V

Chi Yang for Chuck Elly ________ **Date** 11/22/91
Chuck Elly
Director,
Central Region Laboratory

________ **Date** 11/21/91
Valerie Jones
QA Officer, Region V

1.3 SUMMARY OF OVERSIGHT ACTIVITIES

As part of enforcement oversight, PRC Environmental Management, Inc. (PRC), under the direction of the EPA Remedial Project Manager (RPM), will collocate approximately 10 percent of the investigative samples collected by Barr during Phase I and Phase II of the RI/FS at the WCP site. Surface soil samples, background soil samples and, trench soil samples will be collected in Phase I only. Soil boring samples and ground-water samples will be collected in Phase II. Oversight sample locations will be both random and biased. During Phase I, the background soil samples and trench soil samples will be biased to determine the concentration of background or soil contamination and to select soil sample and ground-water sample locations in Phase II. Background soil samples and trench soil samples will be based on visual observations, field screening results, and with direction from the RPM. Surface soil samples will be randomly chosen from the surface soil sampling grid established by Barr. Surface soil samples will be collected from every fourth sample location. The soil boring samples and ground-water samples in Phase II will be biased to determine the extent of soil and ground-water contamination. Soil boring samples and ground-water samples will be based on visual observations, field screening results, and with direction from the RPM.

Two of the collocated trench soil samples and two of the collocated surface soil samples will be analyzed for dibenzofurans and dioxins in addition to the full Target Compound List (TCL) and full Target Analyte List (TAL) analyses. Soil samples analyzed for dibenzofurans and dioxins will be based on visual observations, field screening results, and with direction from the RPM. A Special Analytical Services (SAS) Client Request Form is included in Appendix C. All dibenzofuran and dioxin analyses will be analyzed in accordance with the SAS Statement of Work (SOW) (Appendix D). If dibenzofurans and dioxins are detected, the RPM may direct the PRP contractor to include these analyses in Phase II. PRC also intends to collect five additional soil samples (three trench and two surface soil) for full TCL and TAL analyses. These five soil samples will be biased to determine the concentration of soil contamination and to select Phase II sampling locations. The five soil samples will be based on visual observations, field screening results, and with direction from the RPM.

Oversight sampling will serve to enlarge EPA's data base and will be used as an external quality assurance check on the sampling and analytical procedures used by the PRP and their laboratory. The Data Quality Objectives (DQOs) of Level of 4 for all TAL and TCL analyses and DQO Level 5 for dibenzofurans and dibenzodioxins are appropriate. Therefore, this quality assurance project plan (QAPjP) presents the procedures that will implemented by PRC in the collection and analysis of

samples are collected at a frequency of one per group of 10 or fewer investigative samples per sample matrix.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples will be used to assess the accuracy of sample results. MS/MSD samples will be collected at a frequency of one per 20 or fewer investigative samples per sample matrix. For water samples, extra sample volumes will be collected for samples designated for MS/MSD analysis. Triple the normal sample volumes (6 x 40-milliliter (ml) vials) will be collected for VOCs and double the normal sample volume (4 x 80 oz. (2,000 ml) bottles) will be collected for SVOCs and pesticides/PCBs. Double the normal volume (2 x 1,000 milliliter bottles) will be collected for inorganics.

For completeness, it is expected that the CLP procedures proposed for chemical characterization of the samples collected will provide data meeting QC acceptance criteria for all samples tested. To accurately assess the data and incorporate it in the RI/FS reports and Risk Assessment, valid data are required for all samples, especially those which are representative of background conditions and drinking water quality.

There is limited historical data to which sample results can be compared. The limited soil and ground-water sampling was conducted in a relatively small area which is now the new slip number 3. The results of the samples collected will be reviewed to ensure they are comparable to each other and meet the objectives of the project.

TABLE 4.1

OVERSIGHT SAMPLING DESIGN
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

Matrix	Sample Locations	Parameters[1]	Matrix Total	Investigative Samples[2]	Field Duplicates	Field Blanks	Matrix Spk/Dup	Trip Blanks
Groundwater	TBD[3]	TCL TAL	7	5	1	1	1	1
Soil/Trench	TBD	TCL TAL	8	6	1	0	1	0
Soil/ Background	TBD	TCL TAL	4	2	1	0	1	0
Soil/Surface	TBD	TCL TAL	6	4	1	0	1	0
Soil/Borings	TBD	TCL TAL	17	14	2	0	1	0

Notes:

1 Two trench and two surface soil samples will be analyzed for dibenzofurans and dibenzodioxins using the SAS.

2 Three times the normal sample volume for VOC analysis, double the normal sample volume for SVOCs and pesticides/PCBs analysis, and double the normal sample volume for inorganic analysis will be collected for one of the investigative samples. The additional sample will be used by the laboratory for matrix spike/matrix spike duplicate analysis.

3 TBD - to be determined (see Section 4.0 Sampling Procedures).

Each oversight sample cooler shipped to the CLP laboratory containing aqueous VOCs will contain a trip blank to be analyzed for VOCs. The trip blank will be prepared by PRC. Each trip blank will consist of two 40-ml glass vials with Teflon-lined septa caps filled with organic-free deionized water. The trip blank vials should travel to and from the field without being opened.

For one investigative oversight sample, three times the normal sample volume for VOC analysis, double the normal sample volume for SVOCs and pesticides/PCBs analysis, and double the normal sample volume for inorganic analysis will be collected. The extra volumes will be used by the laboratory for MS/MSD analysis. Additional sample containers will be labeled with the sample number followed by MS or MSD to identify to the laboratory which sample containers should be used for MS or MSD analyses.

4.2 SAMPLE NUMBERING

A sample numbering system will be used to identify each sample for chemical analysis, including duplicates and blanks. A listing of the sample identification numbers will be maintained in the logbook by the field leader. Each number will include three identifiers -- project, sample type, and sample identifier. Field blanks and duplicates will be assigned sample numbers in the same manner as other samples. This will prevent the laboratory from knowing which samples are blanks and duplicates during analysis. Field blanks and duplicates will not be used for matrix spike analysis.

4.2.1 PROJECT IDENTIFICATION

A three-letter designation will be used to identify the site were the sample was collected. WCP will be used for the Waukegan Manufactured Gas and Coke Plant Site.

4.2.2 SAMPLE TYPE

Each sample collected will be further identified by an alpha-code corresponding to the sample type. The alpha-codes are as follows:

- GW -- Ground water
- SS -- Surface soil
- TS -- Trench soil
- BS -- Borehole soil
- FB -- Field blank
- TB -- Trip blank

4.2.3 SAMPLE IDENTIFIER

A three-digit number will be used to indicate the sample collection location.

4.2.4 SAMPLE NUMBER EXAMPLES

Examples of the three part numbering system are provided below:

- WCP - SS - 001 = WCP site surface soil sample, Sample No. 1
- WCP - GW - 003 = WCP site ground-water sample, Sample No. 3
- WCP - TB - 001 = WCP site trip blank sample, Sample No. 1
- WCP - GW - 003D = WCP site ground-water sample, Sample No. 3, duplicate
- WCP - FB - 001 = WCP site field blank sample, Sample No. 1

Table 4.2 contains directions on the types and quantities of sample containers required for each analysis, the proper sample preservation techniques, and holding times.

Sample packaging and shipment will be performed according to the EPA requirements as described in Appendix D of the U.S. EPA Region V Central Regional Laboratory SARA/Superfund Sample Handling Manual, March 1989. All low level samples container will be enclosed in a clear plastic bag and placed in a cooler packed with noncombustible, absorbent packing material. Coolers must contain enough ice to maintain sample temperature at less than 4°C. All medium level and dioxin samples must be sealed in metal paint can for shipment. Each cooler must be sealed with custody tape in such a manner that the tape would be broken if the cooler were opened. Waterproof tape must cover the custody tape. Coolers will be shipped by overnight carrier on the same day as sampling.

TABLE 4.2
REQUIRED SAMPLE VOLUMES, CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES
WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE
WAUKEGAN, ILLINOIS

Matrix	Analysis	Container	Preservation	Contractual Holding Time
Water	VOC	2 x 40 ml glass vial, teflon-lined septum	HCL to pH <2	10 days
Water	SVOC	2,000 ml glass, teflon-lined cap	4°C	5 days
Water	Pest/PCBs	2,000 ml glass, teflon-lined cap	4°C	5 days
Water	Metals	1,000 m. polyethylene	HNO_3 to pH <2	6 months[1]
Water	Cyanide	1,000 ml polyethylene	Na OH to pH >12	12 days
Soil	VOC	2 x 2 oz. glass, teflon-lined cap	4°C	10 days
Soil	SVOC Pest/PCBs	8 oz. glass, teflon-lined cap	4°C	10 days
Soil	Metals	8 oz. glass	4°C	180 days[1][2]
Soil	Dibensofurans and dibenzodioxins	8 oz. glass	4°C	60 days

Notes:

(1) Holding time for mercury is 26 days.

(2) Holding time for cyanide is 12 days.

TARGET COMPOUND LIST - VOLATILES

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
Chloromethane	10	10
Bromomethane	10	10
Vinyl Chloride	10	10
Chloroethane	10	10
Methylene Chloride	10*	10*
Acetone	10	10
Carbon Disulfide	10*	10*
1,1-Dichloroethene	10*	10*
1,1-Dichloroethane	10*	10*
1,2-Dichloroethene (total)	10*	10*
Chloroform	10*	10*
1,2-Dichloroethane	10*	10*
2-Butanone	10	10
1,1,1-Trichloroethane	10*	10*
Carbon Tetrachloride	10*	10*
Bromodichloromethane	10*	10*
1,2-Dichloropropane	10*	10*

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
cis-1,3-Dichloropropene	10*	10*
Trichloroethene	10*	10*
Dibromochloromethane	10*	10*
1,1,2-Trichloroethane	10*	10*
Benzene	10*	10*
trans-1,3-Dichloropropene	10*	10*
Bromoform	10*	10*
4-Methyl-2-pentanone	10	10
2-Hexanone	10	10
Tetrachloroethene	10*	10*
Toluene	10*	10*
1,1,2,2-Tetrachloroethene	10*	10*
Chlorobenzene	10*	10*
Ethyl Benzene	10*	10*
Styrene	10*	10*
Xylenes (total)	10*	10*

* CRQLs previously 5 ug/L and 5 ug/Kg in 2/88 SOW.

NOTE:

- THE SAMPLE-SPECIFIC CRQLs FOR SOIL SAMPLES WILL BE ADJUSTED FOR PERCENT MOISTURE AND WILL BE HIGHER THAN THOSE LISTED ABOVE.
- MEDIUM LEVEL SOIL CRQL = 120 x AQUEOUS CRQL REPORTED IN UG/KG.

TARGET COMPOUND LIST - SEMIVOLATILES

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
Phenol	10	330
bis(2-Chloroethyl)ether	10	330
2-Chlorophenol	10	330
1,3-Dichlorobenzene	10	330
1,4-Dichlorobenzene	10	330
1,2-Dichlorobenzene	10	330
2-Methylphenol	10	330
2,2'-oxybis(1-Chloropropane)	10	330
4-Methylphenol	10	330
N-Nitroso-di-n-dipropylamine	10	330
Hexachloroethane	10	330
Nitrobenzene	10	330
Isophorone	10	330
2-Nitrophenol	10	330
2,4-Dimethylphenol	10	330
bis(2-Chloroethoxy)methane	10	330
2,4-Dichlorophenol	10	330
1,2,4-Trichlorobenzene	10	330
Naphthalene	10	330
4-Chloroaniline	10	330
Hexachlorobutadiene	10	330
4-Chloro-3-methylphenol	10	330
2-Methylnaphthalene	10	330
Hexachlorocyclopentadiene	10	330
2,4,6-Trichlorophenol	10	330
2,4,5-Trichlorophenol	25*	800*
2-Chloronaphthalene	10	330
2-Nitroaniline	25*	800*
Dimethylphthalate	10	330
Acenaphthylene	10	330
2,6-Dinitrotoluene	10	330
3-Nitroaniline	25*	800*

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
Acenaphthene	10	330
2,4-Dinitrophenol	25*	800*
4-Nitrophenol	25*	800*
Dibenzofuran	10	330
2,4-Dinitrotoluene	10	330
Diethylphthalate	10	330
4-Chlorophenyl-phenylether	10	330
Fluorene	10	330
4-Nitroaniline	25*	800*
4,6-Dinitro-2-methylphenol	25*	800*
N-nitrosodiphenylamine	10	330
4-Bromophenyl-phenylether	10	330
Hexachlorobenzene	10	330
Pentachlorophenol	25*	800*
Phenanthrene	10	330
Anthracene	10	330
Carbazole	10	330
Di-n-butylphthalate	10	330
Fluoranthene	10	330
Pyrene	10	330
Butylbenzylphthalate	10	330
3,3'-Dichlorobenzidine	10**	330**
Benzo(a)anthracene	10	330
Chrysene	10	330
bis(2-Ethylhexyl)phthalate	10	330
Di-n-octylphthalate	10	330
Benzo(b)fluoranthene	10	330
Benzo(k)fluoranthene	10	330
Benzo(a)pyrene	10	330
Indeno(1,2,3-cd)pyrene	10	330
Dibenz(a,h)anthracene	10	330
Benzo(g,h,i)perylene	10	330

* CRQLs previously 50 ug/L and 1600 ug/Kg in 2/88 SOW ** CRQLs previously 20 ug/L and 660 ug/Kg in 2/88 SOW.

NOTE:

- THE SAMPLE-SPECIFIC CRQLs FOR SOIL SAMPLES WILL BE ADJUSTED FOR PERCENT MOISTURE AND WILL BE HIGHER THAN THOSE LISTED ABOVE.
- MEDIUM LEVEL SOIL CRQL = 1000 x AQUEOUS CRQL REPORTED IN UG/KG.

USEPA CONTRACT LABORATORY PROGRAM
STATEMENT OF WORK FOR ORGANIC ANALYSIS
MULTI-MEDIA, MULTI-CONCENTRATION
OLM01.0

TARGET COMPOUND LIST - PESTICIDES/PCBs

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil** CRQL (ug/Kg,ppb)
alpha-BHC	0.05	1.7
beta-BHC	0.05	1.7
delta-BHC	0.05	1.7
gamma-BHC (Lindane)	0.05	1.7
Heptachlor	0.05	1.7
Aldrin	0.05	1.7
Heptachlor epoxide	0.05	1.7
Endosulfan I	0.05	1.7
Dieldrin	0.10	3.3
4,4'-DDE	0.10	3.3
Endrin	0.10	3.3
Endosulfan II	0.10	3.3
4,4'-DDD	0.10	3.3
Endosulfan sulfate	0.10	3.3

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil** CRQL (ug/Kg,ppb)
4,4'-DDT	0.10	3.3
Methoxychlor	0.5	17.0
Endrin ketone	0.10	3.3
Endrin aldehyde	0.10	3.3
alpha-Chlordane	0.05*	1.7
gamma-Chlordane	0.05*	1.7
Toxaphene	5.0*	170.0
Aroclor-1016	1.0*	33.0
Aroclor-1221	2.0*	67.0
Aroclor-1232	1.0*	33.0
Aroclor-1242	1.0*	33.0
Aroclor-1248	1.0*	33.0
Aroclor-1254	1.0	33.0
Aroclor-1260	1.0	33.0

Aqueous CRQLs changed from 2/88 SOW to the following:

* Aqueous CRQLs (ug/L) - alpha- and gamma- Chlordane from 0.5 to 0.05;
Toxaphene from 1.0 to 5.0;
Aroclors-1016, 1232, 1242, and 1248 from 0.5 to 1.0;
Aroclor-1221 from 0.5 to 2.0.

All low soil CRQLs changed from 2/88 SOW to the following:

** Low Soil CRQLs (ug/Kg) - alpha-BHC through Endosulfan I from 8.0 to 1.7;
Dieldrin through 4,4'-DDT and Endrin ketone from 16.0 to 3.3;
Methoxychlor from 80.0 to 17.0;
alpha- and gamma-Chlordane from 80.0 to 1.7;
Toxaphene from 160.0 to 170.0;
Aroclor-1016, 1232, 1242, and 1248 from 80.0 to 33.0;
Aroclor-1221 from 80.0 to 67.0;
Aroclor-1254 and 1260 from 160.0 to 33.0.

NOTE:

USEPA CONTRACT LABORATORY PROGRAM
STATEMENT OF WORK FOR INORGANIC ANALYSIS
MULTI-MEDIA, MULTI-CONCENTRATION
ILM01.0

TARGET ANALYTE LIST

Analyte	Aqueous CRDL (ug/L,ppb)	Soil CRDL (mg/Kg,ppm)
Aluminum	200	40
Antimony	60	12
Arsenic	10	2
Barium	200	40
Beryllium	5	1
Cadmium	5	1
Calcium	5000	1000
Chromium	10	2
Cobalt	50	10
Copper	25	5
Iron	100	20
Lead	3	0.6

Analyte	Aqueous CRDL (ug/L,ppb)	Soil CRDL (mg/Kg,ppm)
Magnesium	5000	1000
Manganese	15	3
Mercury	0.2	0.1
Nickel	40	8
Potassium	5000	1000
Selenium	5	1
Silver	10	2
Sodium	5000	1000
Thallium	10	2
Vanadium	50	10
Zinc	20	4
Cyanide	10	2

NOTE:

- THE SAMPLE-SPECIFIC CRDLs FOR SOIL SAMPLES WILL BE ADJUSTED FOR PERCENT MOISTURE AND WILL BE HIGHER THAN THOSE LISTED ABOVE.